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OENOTHERA LAMARCKIANA: ITS EARLY CULTIVATION AND DESCRIPTION

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The question raised by Dr. R. R. GATES in a recent number of *Science* (N.S. 31:425. 1910) as to the earliest description and origin of *Oenothera Lamarckiana* Seringe, the importance of which is expressed in a notice in the BOTANICAL GAZETTE (50:79. 1910), is the occasion of some historical investigation I have made along the same lines. GATES takes as the earliest description one in manuscript in the form of a long marginal note in a copy of C. BAUHIN'S *Pinax*, forming one of the Sturtevant collection in the library of the Missouri Botanical Garden. It was apparently written by one JOANNIS SNIPPENDALE, and is considered as written from the living specimens. In the *Pinax* the plant is called *Lysimachia lutea corniculata*.

GATES gives four characteristics to show that the description applies to a plant of *O. Lamarckiana* and not to *O. biennis* L. or to *O. grandiflora* Ait. These are in the main the form of the rosette leaves, the large flowers, the type of hair arising from reddened papillae, and the quadrangular buds. But taking these as the criteria, I fail to see in what respect it is not essentially the same as a lengthy description made by BAUHIN and published in 1623 in the appendix to the *Pinax* (pp. 520, 521). This of necessity is older than any marginal one placed in a copy subsequent to publication, with the additional advantage of a definite date, if applicable to the same species. The *Pinax* is mainly a bibliography of botany, up to the time of its publication notes or brief characterizations being frequently added to the various topics. In the appendix are corrections of errors made in some of the earlier printed parts, an interruption in the printing affording an opportunity for this, and for the addition of other matter. These are mostly descriptions of plants mentioned in the body of the book, or of new forms, all longer than those customarily given. The longest and fullest of these is *Lysimachia lutea corniculata*, mentioned in the previous part of the work (p. 245), where but five lines were devoted to it, here fifty-three, or more than a column of the double-columned quarto. It has every appearance of being based on the living specimens growing in his garden. Near the close of the account he says:

> We received the seed of this [plant], under the name of *Lysimachia virginiana*, from Padua in 1619. Being sown in the spring it remained all summer and winter without a stem, but in the following year produced a stem towards the end of spring and began to flower in June. From the seed, which falls in autumn (for the plant is annual), it blooms abundantly in my garden every year, even up to the close of autumn.

The phraseology on p. 245 is slightly different, and is the one I usually see quoted. Under *Lysimachia lutea corniculata* it is stated:

> The seed itself, which was sent from Padua in 1619, grew finely in the garden, and it is readily spontaneous from the fallen seed up to this time.

The account in the appendix may not be in all copies. A second edition of the *Pinax* was published, in references to which I find different dates attached (1661, 1675). On a flyleaf of my copy is written by some unknown hand "Une 2^{me} Edition sans changement parût en 1671." It was a reprint. Authors sometimes cite one of these references, sometimes both, but that on page 245 when but one is given. Thus GRONOVIUS in CLAYTON'S *Flora virginica* (p. 58, 1762), under *Lysimachia lutea corniculata*, gives only p. 245. LINNAEUS, in his *Hortus Cliffortianus* (p. 144, 1737), gives both, but has p. 516 instead of 520, perhaps a typographical error; if not, it shows discrepancies in copies. Much of the description which covers this and other references to *Lysimachia lutea* by various authors cited in RAY'S *Historia plantarum* is a verbatim transcript of BAUHIN'S in the appendix to the *Pinax* (1:862. 1686). There are some omissions and a few minor changes and additions. But these might be needful, as he sought to include variations or forms covered by four descriptive or adjective terms (*virginiana*, *siliquosa*, *corniculata*, and *americana*) published between 1623 (BAUHIN) and 1651 (FABIUS COLUMNA).

The time of introduction of *O. Lamarckiana* into Europe is taken to be about 1614. LINNAEUS (*Hort. Cliff.*) says: "Brought to Europe 120 years ago [1617 according to date of publication], now become spontaneous and growing everywhere in the sandy fields of Holland." A. DE CANDOLLE (*Géographie Botanique* **2**:711. 1855) cites this passage from LINNAEUS, and an additional one from his *Species plantarum* (2d edition): "Hab. in Virginia, unde 1614." This last date is given by LAMARCK and MIRBEL in their *Histoire naturelle des végétaux* (**13**:82. 1803):

> Cette plante originaire de la Virginie et du Canada, a été apportée en Europe en 1614; elle s'y est tellement multiplicée qu'on peut la regarder comme naturalisée.

This is of course under the Linnean species *O. biennis*.

But one of the most important passages leading up to the introduction of the plant, and throwing light on its early history, is in the work of DE CANDOLLE just mentioned. He devotes considerable space to the naturalization of plants and the approximate time of introduction into different countries and their most probable place of origin. In his article *Naturalisation à grande distance*, *Oenothera biennis* L. has a prominent place. This includes the different forms segregated by others. After giving the passage quoted above from BAUHIN'S *Pinax* (p. 245), but with no allusion to the corresponding one in the appendix or mention of the description there, he says (**2**:711):

> Mon père a vu dans l'herbier de BAUHIN à Bâsle l'échantillon authentique venant d'un jardin, et il a vérifié que c'est bien l'*Oenothera biennis* L. actuellement répandu dans plusieurs parties de l'Europe. L'édition du *Pinax* de 1661 ne dit rien de plus que la première. JEAN BAUHIN n'en parle pas. P. ALPINUS (*Exot. ann.* 1627, p. 325) donne une figure où l'on reconnait l'espèce; il la nomme *Hyoscyamus virginianus*, et il dit: "Ab hinc annos duos mihi nata est planta ex seminibus nomine *Lysimachiae virginianae* ad me missis a JOANNE MORO medico et philosopho anglo erudissimo." Peut-être cette phrase a-t-elle été écrite quelques années avant la publication de l'ouvrage, par exemple vers 1621 ou 1622, de sorte que la culture dans le jardin de Padoue, dont parle PROSPER ALPINUS, serait la même dont C. BAUHIN faisait mention. Quoi qu'il en soit, il me parait évident que l'*Oenothera biennis* était alors cultivé dans le jardin de Padoue, comme une plante rare.

The attempt to reconcile dates made in this passage by DE CANDOLLE is readily obviated. He does not seem to recall that ALPINUS died in 1617, and that the work from which he quotes was a posthumous publication by his son (*De plantis exoticis libri duo*. Venice. 1627), so that he could not have written this in 1621 or 1622, nor sent seeds to BAUHIN in 1619. Born near Venice, ALPINUS became professor of botany in the University of Padua in 1593, and, if not then, somewhere between that time and 1617, the date of his death,[1] became director (*praefectus*) of the botanic garden at Padua.

Though BAUHIN could not have obtained the seed from ALPINUS in 1619, we are not devoid of a clue to the garden at Padua. Fortunately, among other sources for his *Pinax* which BAUHIN gives, is a preliminary page with the heading *Nomina eorum qui plantas vel semina communicarunt*. Three of these were connected with the garden at Padua. The dates are not given, but the order of succession places them: (1) "JACOBUS ANTONIUS CORTUSUS, quintus Patavini horti praefectus"; (2) "PROSPER ALPINUS, Profess. et horti Patavini sextus praefectus"; (3) "JOAN. PREVORTIUS, Med. Professor et horti Patavini septimus praefectus." The succession being without a break, and the time being so short between the death of ALPINUS and the reception of the seed by BAUHIN in 1619, taken in connection with his full and careful record of sources, leaves little room for doubt that they were obtained from PREVORTIUS, the seventh director of the garden.

There is, however, a very narrow interval between the commonly accepted date of introduction from America and the death of ALPINUS (1617), in which he states that he raised plants from seeds obtained from Dr. MORE. For the "two years ago" ("ob hinc duos annos") refers evidently to the time when the plants came up and not to the date of reception. Two years had elapsed between the appearance of the plants and the writing of the account. It would be necessary to place the date of introduction as early as 1614 at least. The figure of the plant in the work of ALPINUS, therefore, must be a representation of one almost at the beginning of its appearance in Europe. DE CANDOLLE, comparing the figures of *Lysimachia lutea siliquosa virginiana* given by PARKINSON in his earliest work (*Paradisus*, 1629) and in his second work (*Theat-*

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[1] BAILLON, Dict. de Botanique. Art. PROSPERO ALPINI; SPRENGEL, Gesch. der Bot. 1:356. 1817.

rum, 1640) with that in ALPINUS (*Exot.*, 1627), says that the petals differ, being strongly mucronate in the *Theatrum*, lightly so in the *Paradisus*, emarginate as in the modern plant in ALPINUS, and that PARKINSON'S plant is perhaps different (p. 712). I have seen that in the *Paradisus* (the reprint, London, 1904) and can confirm the statement as to this. The mucro is so broad and low in some of the petals as to give the tips a wavy appearance. The plant is a little branched, and it is stated that it may reach the height of a man. BAUHIN gives this height also. With regard to the form of the petals, DE VRIES mentions a similar discrepancy between the description by LAMARCK of *O. longiflora* Jacq., and the specimen from LAMARCK found in the herbarium of the Museum d'histoire naturelle at Paris. The description says they were rounded, the example shows that they were obcordate.[2] All tends to show that differences, specific or not, existed in the cultivated plants at so early date that they must have been present in a wild state in America before the introduction into the gardens of Europe.

By whatever means the plants may have reached Europe, we may conclude that the line of transmission of what is now recognized as *O. Lamarckiana* up to the time of the publication of BAUHIN'S description in 1623 was as follows: from JOANNES MORUS of England to PROSPER ALPINUS at Padua, 1614 or earlier; from JOANNES PREVORTIUS of Padua to C. BAUHIN at Bâsle, 1619. His description may therefore be pretty safely dated within nine years or less of the probable introduction.

CHICAGO

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[2] DE VRIES, HUGO, Die Mutationstheorie 1:316, 317. 1901.